

METHODS FOR FABRICATING AN ALIGNED OPTOELECTRONIC WAVEGUIDE CIRCUIT

ABSTRACT OF THE DISCLOSURE

Two techniques are disclosed for writing waveguides between laser diodes and a fiber channel such that the laser diodes are aligned with their respective waveguide facets. The first technique utilizes a light sensitive polymer, such as a ultra-violet (UV) cross-linkable polymer. A precision writing system locates the light emitting centers of the laser diodes and writes the waveguide circuit by exposing the waveguiding regions with the appropriate light. The unexposed areas of the core layer are developed with a solvent and removed. The entire device is then encapsulated with a low-index cladding polymer. The second technique utilizes an active polymer approach in which waveguide regions are formed when the writing beam aligns the dipole molecules in the polymer to cause a change in the refractive index of the polymer.